IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (currently amended) A recording medium for storing a program executable by an information apparatus for implementing a parallel matrix processing method in matrix processing, which includes LU factorization, and is carried out by a shared-memory scalar parallel-processing computer having a plurality of processor modules, secondary caches corresponding respectively to the processor modules, primary caches respectively included in the processor modules, an interconnection network connecting the processor modules via the secondary caches, and a plurality of memory modules which the processor modules can access via the interconnection network, said method comprising:

dividing a matrix into small matrix blocks consisting of a diagonal block defined to align along the diagonal part, a block that is ~~log~~ long in the row direction and positioned contiguously to the diagonal block, a block that is long in the column direction and positioned contiguously to the diagonal block and a square block;

storing the diagonal blocks and small matrix blocks obtained by equally dividing the block that is long in the column direction and positioned contiguously below the diagonal block in local memories of said processor modules;

processing, in parallel by said processor modules, the blocks stored respectively in the local memories of said processing modules together with the diagonal block and the block that is long in the row direction or column direction so as to be the same with the calculation results of corresponding block parts when a square matrix is LU factorized; and

updating the square block by deducting from the square block the products between the block that is long in the row direction and the block that is long in the column direction using results of processing of said small matrix blocks obtained at said processing step.

3. (previously presented) A recording medium according to claim 1, said method further comprising:

extracting pivot candidates, each of which represents a matrix element associated with the largest value of the concerned matrix, from data of said small matrix blocks processed by said processor modules; and

determining a final one of said pivots with a maximum data value among said candidates in a memory area common to said processor modules, and

wherein said LU factorization is carried out by using said determined pivot.

4. (previously presented) A recording medium according to Claim 2 wherein said LU factorization of said entire matrix is completed by execution of the method comprising:

sequentially updating portions of said matrix starting with one on the outer side of said matrix in accordance with a recursive algorithm; and

eventually applying said LU factorization by using one processor module to a portion that remains to be updated inside said matrix.

5. (previously presented) A recording medium according to Claim 1 wherein said matrix processing is Cholesky factorization or a modified version of said Cholesky factorization applied to said matrix.

6. (previously presented) A recording medium according to Claim 5 wherein said Cholesky factorization or said modified version of said Cholesky factorization is carried out to complete said LU factorization of said entire matrix by execution of the method comprising:

sequentially updating portions of said matrix starting with one on the outer side of said matrix in accordance with a recursive algorithm; and

eventually applying said LU factorization by using one processor module to a portion that remains to be updated inside said matrix.

7. (previously presented) A recording medium according to Claim 5 wherein, at said updating step,

a triangular matrix portion of each of said small matrix block to be updated is divided into $2 \times N$ fine blocks wherein the symbol N denotes the number of processor modules; and

said fine blocks are assembled to form N pairs each stored in a local memory area of one of said processor modules to be processed by said processor module.

8. (currently amended) A parallel matrix processing method applied to matrix processing, which includes LU factorization, and is carried out by a shared-memory scalar parallel-processing computer having a plurality of processor modules, secondary caches corresponding respectively to the processor modules, primary caches respectively included in the processor modules, an interconnection network connecting the processor modules via the secondary caches, and a plurality of memory modules which the processor modules can access via the interconnection network, said parallel matrix processing method comprising:

dividing a matrix into small matrix blocks consisting of a diagonal block defined to align along the diagonal part, a block that is ~~log~~ long in the row direction and positioned contiguously to the diagonal block, a block that is long in the column direction and positioned contiguously to the diagonal block and a square block;

storing the diagonal blocks and small matrix blocks obtained by equally dividing the block that is long in the column direction and positioned contiguously below the diagonal block in local memories of said processor modules;

processing, in parallel by said processor modules, the blocks stores respectively in the local memories of said processing modules together with the diagonal block and the block that is long in the row direction or column direction so as to be the same with the calculation results of corresponding block parts when a square matrix is LU factorized; and

updating the square block by deducting from the square block the products between the block that is long in the row direction and the block that is long in the column direction using results of processing of said small matrix blocks obtained at said processing step.

9. (currently amended) A shared-memory scalar parallel-processing computer having a plurality of processor modules, said shared-memory scalar parallel-processing computer comprising:

a blocking unit dividing a matrix into small matrix blocks consisting of a diagonal block defined to align along the diagonal part, a block that is ~~log~~ long in the row direction and positioned contiguously to the diagonal block, a block that is long in the column direction and positioned contiguously to the diagonal block and a square block;

a storage unit storing diagonal blocks and small matrix blocks obtained by equally dividing the block that is long in the column direction and positioned contiguously below the diagonal block in local memories of said processor modules;

a processing unit in parallel by said processor modules, the blocks stores respectively in the local memories of said processing modules together with the diagonal block and the block

that is long in the row direction or column direction so as to be the same with the calculation results of corresponding block parts when a square matrix is LU factorized; and

an updating unit updating the square block by deducting from the square block the products between the block that is long in the row direction and the block that is long in the column direction using results of processing of said small matrix blocks produced by said processing means.